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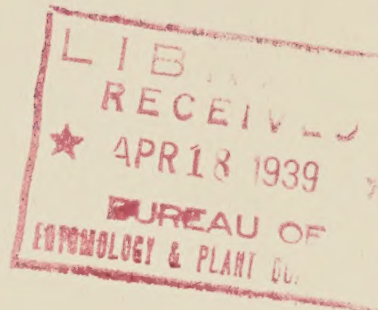
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CORRELATION BETWEEN DEVELOPMENT OF PECTINOPHORA  
GOSSYPIELLA SAUNDERS AND AGE OF COTTON SQUARES

By

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2396

During the summer of 1932 the writer, assisted by Mr. L. C. Fife, made studies on the biology of the pink bollworm (Pectinophora gossypiella, Saund.) at Presidio, Tex., and while carrying out these studies made observations on the rate of development of the pink bollworm in relation to the age of the cotton square. The observations revealed that there was a correlation or synchronization between the rate of development of the pink bollworm larva and the age of the cotton square at the time larval feeding began. In other words, the larval feeding period was adjusted to the development of the square so that feeding was completed or almost so at the time the flower opened. It is needless to say that there is an upper and a lower limit to the age of the square in which a pink bollworm larva can develop, but these limits were not determined.

Methods and Procedure

In June 1932, on approximately the first date squares were available, a number of cotton plants were examined and all squares (fruit buds) which were large enough to be seen were marked with small tags. (It was assumed that the squares at this time were 2 to 3 days old.) On the date the first tagged squares were 10 days old a freshly issued first instar pink bollworm larva was placed on each, a small camel's-hair brush being used and a cellophane bag placed over the infested square and tied securely around the petiole for protection and to prevent further infestation. A similar procedure was followed in infesting squares 17 days old. A duplicate test was conducted one month later, squares 11 and 16 days old, respectively, being used.

The infested squares were observed daily and the date of blooming recorded for each. Squares which were 16 and 17 days old when infested were allowed to remain on the plant for 7 days regardless of the date of blooming, while those infested when 10 and 11 days old were removed on the date of blooming or when it was observed that the square had shed prior to blooming as a result of feeding of the pink bollworm larva. When the infested squares were removed from the plant they were placed in vials in a screened insectary supplied with sufficient moisture for insect development, and daily observations were made to determine the length of the prepupal and pupal periods and the date of emergence. Air-temperature records were recorded on a thermograph.





## Results

For convenience the data from the two series of tests in which were used squares 16 and 17 and 10 and 11 days old, respectively, have been combined and are shown in Table 1.

For 49 individuals developing in squares 16 and 17 days old at the time larval feeding began, the average period for total development from egg deposition to emergence of adult was 22.57 days, whereas 24 individuals developing in squares 10 to 11 days old required an average of 28.33 days to complete development, a difference of 5.76 days in favor of the former. Proceeding further, it is seen that the feeding time of the larvae in the former averaged only 7.08 days whereas in the latter the average time was 12.42 days, or a difference of 5.34 days. There was a slight difference in the prepupal and pupal periods for the two series, but for the most part the difference in the time required for total development was confined to the feeding period. In all cases the incubation period was constant at 4.5 days, as freshly issued larvae from the same or identical egg masses of known dates of deposition were used to infest the squares of different ages.

## Summary

There is a correlation between the rate of development of the larva of Pectinophora gossypiella and the age of the cotton square. Development was always more rapid in squares of advanced age than in younger squares, indicating the pink bollworm larva's ability to adapt its rate of development to the size and age of the square so that feeding is about completed at the time of blooming. As a rule the variation in the length of the feeding period of the larva has very little if any effect upon the duration of the other stages in the development of an individual.





and Age of Cotton Square, Presidio, Tex., 1932

24 : 10 - 11 : 12.42 : 4.5 : 12.42 : 3.00 : 8.41 : 28.33 : 26.5 : 30.5 : 84.65

